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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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ANDRUS, SCEALES, STARKE & SAWALL, LLP
100 EAST WISCONSIN AVENUE, SUITE 1100
MILWAUKEE, WI 53202

EXAMINER	
REIDEL, JESSICA L	
ART UNIT	PAPER NUMBER
3766	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

ED

Office Action Summary	Application No.	Applicant(s)	
	10/824,950	XUE ET AL.	
	Examiner	Art Unit	
	Jessica L. Reidel	3766	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Acknowledgement of Applicant's Amendment, received by the Office on March 22, 2007 is made. Claims 2 and 20 were previously cancelled. Claims 1 and 3-19 are pending.

Claim Objections

2. In view of the response filed on March 22, 2007, the objections to the claims made in the Office Action of December 22, 2006 have been withdrawn.

Claim Rejections - 35 USC § 101

3. In view of the response filed on March 22, 2007, the 35 U.S.C. 101 rejections made in the Office Action of December 22, 2006 have been withdrawn.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 3 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (U.S. 4,136,690) (herein Anderson) in view of Kardys. As to Claims 1 and 3, Anderson discloses a method using an electrocardiogram (ECG) signal comprising measuring a 2-D QRS-T angle, read as defining a relationship, between the QRS peak vector, read as depolarization, and the T-wave peak vector, read as repolarization. Anderson discloses that the 2-D QRS-T angle is "successively stored" and the Examiner interprets this to mean that the 2-D QRS-T angle is determined for a first beat of the ECG, a second beat of the ECG and successive beats of the ECG (see Anderson column 2, lines 19-50 and column 3, lines 8-64). Anderson further discloses that each stored 2-D QRS-T angle is tallied into one of a number of angular ranges for analysis and comparison between ranges, read as calculating a variation between the

successfully stored values (see Anderson column 3, lines 57-67, column 7, lines 43-47 and column 8, lines 59-66). It is inherent or at least obvious to one having ordinary skill in the art at the time the invention was made that, although not expressly disclosed by Anderson, the accumulated data stored, displayed or printed and used for analysis in the method of Anderson assesses a patient's cardiac vulnerability to sudden cardiac death because any arrhythmias present in the vectorcardiograph can be detected and classified and arrhythmias are a well known precursor to sudden cardiac death. The Examiner takes the position that a method, which classifies arrhythmias present in a patient's ECG signal, inherently assesses "vulnerability" to "sudden cardiac death" since an arrhythmia present in a patient's ECG indicates that a patient is more "vulnerable" to experiencing "sudden cardiac death". Anderson discloses the claimed invention as discussed above except that it is not specified that the method calculate a 3-D QRS-T angle from a set of orthoganalized X, Y and Z leads of the ECG and then use the 3-D QRS-T angle to asses a patient's cardiac vulnerability to sudden cardiac death by calculating a variation between successively calculated 3-D QRS-T angles.

Kardys, however, teaches that the spatial QRS-T angle, read as the 3-D QRS-T angle since it is disclosed to be calculated from a set of orthoganalized X, Y and Z leads of the ECG, is a strong and independent predictor of cardiac mortality that is less susceptible to noise. Kardys also discloses that calculation of the 3-D QRS-T angle can be easily implemented on modern electrocardiographs, which are nowadays equipped with sufficient computing power. Kardys teaches that the abnormal 3-D QRS-T angles are associated with worse cardiac outcomes such as fatal cardiac events (see Kardys pages 1357-1364). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Anderson in

view of Kardys to utilize a 3-D QRS-T angle calculated from a set of orthoganalized X, Y and Z leads of the ECG since such a modification would allow for assessment a patient's worsening condition and since such a modification may be easily implemented and is less susceptible to noise.

6. As to Claims 6 and 7, the previously modified Anderson reference discloses the claimed invention except the method does not specify selecting the first beat and the second beat from median beats or mean beats. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method as taught by Anderson in view of Kardys to include selecting the first beat and the second beat from median or mean beats since it was known in the art that such a statistical selection method is used to provide means for lessening the affect that spurious signals have on the diagnosis results.

7. Claims 4-5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson in view of Kardys as applied to claim 1 above, and further in view of Burnes (U.S. 2004/0220635). As to Claims 4 and 5, the previously modified Anderson reference discloses the claimed invention as discussed above except that it is not specified that the method include defining the relationship between depolarization and repolarization to include a QRS duration and a T/QT duration.

Burnes, however, discloses a method using an ECG comprising determining an activation recovery interval (ARI), read as a relationship, as the difference between activation time, read as depolarization, and recovery time, read as repolarization (see Burnes page 8, Claim 6). Burnes also discloses that if a subsequent comparison of a prior dispersion of ARI reveals an increased dispersion of ARI, a worsening heart failure condition is declared (see Burnes page 5, paragraphs

48-51). It is inherent that the subsequent ARI is determined for a first beat and the prior dispersion of ARI determined for a second beat. It is inherent or at least obvious to one having ordinary skill in the art at the time the invention was made that, although not expressly disclosed by Burnes, the detection of increased dispersion disclosed is capable of assessing a patient's cardiac vulnerability to sudden cardiac death because the method indicates a worsening of heart failure and/or increased risk of arrhythmias, both precursors and/or indicators of sudden cardiac death. In addition the detection of increased dispersion disclosed by Burnes is inherently indicative of an increased "vulnerability" to "sudden cardiac death". Burnes further discloses that determination of the dispersion of the ARI includes QRS duration and QT duration and QRS duration and T duration (see Burnes page 1, paragraphs 3-5 and page 6, paragraphs 53-55). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Anderson in view of Kardys and Burnes to include defining the relationship between depolarization and repolarization to further include QRS duration and T/QT duration in order to provide indication of a worsening of heart failure and/or increased risk of arrhythmias, both precursors and/or indicators of sudden cardiac death.

8. As to Claim 8, the previously modified Anderson reference discloses the claimed invention as discussed above except that it is not specified that the first beat be within a first range of heart rate and the second beat be within a second range of heart rate that is different from the first.

Burnes, however, discloses a method using an ECG comprising determining an activation recovery interval (ARI), read as a relationship, as the difference between activation time, read as depolarization, and recovery time, read as repolarization (see Burnes page 8, Claim 6). Burnes

also discloses that if a subsequent comparison of a prior dispersion of ARI reveals an increased dispersion of ARI, a worsening heart failure condition is declared (see Burnes page 5, paragraphs 48-51). It is inherent that the subsequent ARI is determined for a first beat and the prior dispersion of ARI determined for a second beat. It is inherent or at least obvious to one having ordinary skill in the art at the time the invention was made that, although not expressly disclosed by Burnes, the detection of increased dispersion disclosed is capable of assessing a patient's cardiac vulnerability to sudden cardiac death because the method indicates a worsening of heart failure and/or increased risk of arrhythmias, both precursors and/or indicators of sudden cardiac death. In addition the detection of increased dispersion disclosed by Burnes is inherently indicative of an increased "vulnerability" to "sudden cardiac death". Burnes further discloses that dispersion measurements may be performed on a periodic basis for monitoring heart failure status, monitoring arrhythmia risk, or optimizing a therapy in order to reduce dispersion, for example by adjusting cardiac pacing parameters during CRT or adjusting the dosage of a drug therapy (see Burnes page 5, paragraph 47). It is inherent the such an optimization would include selecting a first beat from an ECG signal obtained from the patient prior to the event and selecting the second beat from an ECG signal obtained from the patient after the event. It is also inherent that a first beat selected in this manner would be from an ECG having a heart rate within a first range and a second beat selected in this manner would be from an ECG having a heart rate within a second range that is different from the first due to the administered therapy. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method as taught by Anderson in view of Kardys and Burnes to include a step of selecting the first beat from an ECG obtained from the patient prior to an event and selecting the

second beat from an ECG obtained from the patient after the event where the event includes administering a pharmaceutical drug to a patient in order optimize the invention.

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson in view of Kardys as applied to claim 1 above, and further in view of Kaplan et al. (U.S. 4,732,157) (herein Kaplan). The previously modified Anderson reference discloses the claimed invention as discussed above except that the method does not further comprise conduction a time series analysis of the first and second values.

Kaplan, however, teaches that is known to use a time series to quantify beat-to-beat variability in an ECG waveform in order to determine susceptibility to ventricular fibrillation (see Kaplan column 5, lines 12-23 and column 6, lines 1-22). Kaplan also discloses that an objective of the time series analysis on a plurality of beats is to derive a numerical parameter from the ECG, which is associated with susceptibility to ventricular fibrillation (see Kaplan Abstract and column 2, lines 25-30). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Anderson in view of Kardys and Kaplan to include a time series analysis in order to derive a numerical parameter associated with susceptibility to ventricular fibrillation.

10. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson in view of Kardys as applied to claim 1 above, and further in view of Verrier et al. (U.S. 5,265,617) (herein Verrier '617). The previously modified Anderson reference discloses the claimed invention as discussed above except that the method does not further comprise using a cardiac parameter or heart rate variability in addition to the ECG signal to asses the patient's cardiac vulnerability to sudden cardiac death.

Verrier '617, however, discloses a method and apparatus for the non-invasive diagnosing of cardiac vulnerability to ventricular fibrillation that comprises evaluating heart rate variability in addition to T-wave alternans of the ECG signal (see Verrier '617 Title and Abstract). Verrier '617 discloses that heart rate variability is a measure of autonomic influence, which is a major factor in triggering cardiac arrythmias and that by simultaneous analysis of the ECG signal and heart rate variability allows for the extent and cause of cardiac vulnerability to be assessed so that drug therapy may be tailored per patient (see Verrier '617 column 4, lines 54-67 and column 5, lines 1-5). The Examiner takes the position that heart rate variability is synonymous with a cardiac parameter. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Anderson in view of Kardys and Verrier '617 to include simultaneous evaluation of heart rate variability in addition to the ECG signal to better asses the patient's vulnerability to sudden cardiac death and to tailor a drug therapy as best to treat the patient.

11. Claims 12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson in view of Kardys as applied to claim 1 above, and further in view of Ralph et al "Blunted arterial baroreflec causes 'pathological' heart rate turbulence", cited by Applicant (herein Ralph). The previously modified Anderson discloses the claimed invention as discussed above except that the method does not further comprise using heart rate turbulence in addition to the ECG signal.

Ralph, however, teaches that it is known to utilize a characteristic of baroreflex function such as heart rate turbulence (either onset or slope) as set forth in the Abstract and the third paragraph on page 2, as a superior predictor of sudden cardiac death. In particular, Ralph

discloses that turbulence onset is defined prior to a premature ventricular contraction and after the premature ventricular contraction and turbulence slope is defined within the first 20 sinus-rhythm intervals after the premature contraction. The Examiner takes the position that PVCs naturally have varying cycle lengths and varying morphologies. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method as taught by Anderson in view of Kardys, to include heart rate turbulence in addition to analysis of the ECG signal as taught by Ralph, since such a modification would provide a substantial improvement in the ability to predict sudden cardiac death.

12. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson in view of Kardys and Ralph as applied to claims 1 and 12 above, and further in view of Verrier et al. (U.S. 5,560,370) (herein Verrier '370). The previously modified Anderson reference discloses the claimed invention as discussed above except that the method does not comprise using data corresponding to blood pressure change in addition to heart rate turbulence to asses the patient's cardiac vulnerability to sudden cardiac death.

Verrier '370, however, discloses a method for prediction of cardiac electrical instability that uses baroreflex sensitivity as an additional indicator of cardiac electrical instability and that this sensitivity may be non-invasively characterized as blood pressure (see Verrier '370 column 20, lines 34-45). It would have been obvious to one having ordinary skill in the art to modify the method of Anderson in view of Kardys, Ralph and Verrier to include using data corresponding to blood pressure in addition to heart rate turbulence to non-invasively asses the patient's cardiac vulnerability to sudden cardiac death.

13. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson in view of Kardys and Ralph as applied to claims 1 and 12 above, and further in view of Burnes. The previously modified Anderson reference discloses the claimed invention except that selecting the first beat from an electrocardiogram signal obtained from the patient is not disclosed to occur prior to an event and selecting the second beat from an electrocardiogram signal obtained from the patient is not disclosed to occur at least one of during and after the event where the event includes at least one of administering a pharmaceutical drug to a patient, pacing the patient using exercise, and pacing the patient using an implanted pacemaker.

Burnes, however, discloses a method using an ECG comprising determining an activation recovery interval (ARI), read as a relationship, as the difference between activation time, read as depolarization, and recovery time, read as repolarization (see Burnes page 8, Claim 6). Burnes also discloses that if a subsequent comparison of a prior dispersion of ARI reveals an increased dispersion of ARI, a worsening heart failure condition is declared (see Burnes page 5, paragraphs 48-51). It is inherent that the subsequent ARI is determined for a first beat and the prior dispersion of ARI determined for a second beat. In addition the detection of increased dispersion disclosed by Burnes is capable of assessing a patient's cardiac vulnerability to sudden cardiac death because the method indicates a worsening of heart failure and/or increased risk of arrhythmias, both precursors and/or indicators of sudden cardiac death. Bunres also discloses that dispersion measurements may be performed on a periodic basis for monitoring heart failure status, monitoring arrhythmia risk, or optimizing a therapy in order to reduce dispersion, for example by adjusting cardiac pacing parameters during CRT or adjusting the dosage of a drug therapy (see Burnes page 5, paragraph 47). It is inherent the such an optimization would include

selecting a first beat from an ECG signal obtained from the patient prior to the event and selecting the second beat from an ECG signal obtained from the patient after the event. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method as taught by Anderson in view of Kardys, Ralph and Burnes to include a step of selecting the first beat from an ECG obtained from the patient prior to an event and selecting the second beat from an ECG obtained from the patient after the event where the event includes administering a pharmaceutical drug to a patient in order optimize the invention.

14. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson in view of Kardys and Kaplan. Anderson discloses a method using an electrocardiogram (ECG) signal comprising measuring a 2-D QRS-T angle, read as defining a relationship, between the QRS peak vector, read as depolarization, and the T-wave peak vector, read as repolarization. Anderson discloses that the 2-D QRS-T angle is "successively stored" and the Examiner interprets this to mean that the 2-D QRS-T angle is determined for a first beat of the ECG, a second beat of the ECG and successive beats of the ECG (see Anderson column 2, lines 19-50 and column 3, lines 8-64). Anderson further discloses that each stored 2-D QRS-T angle is tallied into one of a number of angular ranges for analysis and comparison between ranges, read as calculating a variation between the successfully stored values (see Anderson column 3, lines 57-67, column 7, lines 43-47 and column 8, lines 59-66). It is inherent or at least obvious to one having ordinary skill in the art at the time the invention was made that, although not expressly disclosed by Anderson, the accumulated data stored, displayed or printed and used for analysis in the method of Anderson assesses a patient's cardiac vulnerability to sudden cardiac death because any arrhythmias present in the vectorcardiograph can be detected and classified and

arrhythmias are a well known precursor to sudden cardiac death. The Examiner takes the position that a method, which classifies arrhythmias present in a patient's ECG signal, inherently assesses "vulnerability" to "sudden cardiac death" since an arrhythmia present in a patient's ECG indicates that a patient is more "vulnerable" to experiencing "sudden cardiac death". Anderson discloses the claimed invention as discussed above except that it is not specified that the method calculate a 3-D QRS-T angle from a set of orthoganalized X, Y and Z leads of the ECG and then use the 3-D QRS-T angle to asses a patient's cardiac vulnerability to sudden cardiac death by calculating a variation between successively calculated 3-D QRS-T angles.

Kardys, however, teaches that the spatial QRS-T angle, read as the 3-D QRS-T angle since it is disclosed to be calculated from a set of orthoganalized X, Y and Z leads of the ECG, is a strong and independent predictor of cardiac mortality that is less susceptible to noise. Kardys also discloses that calculation of the 3-D QRS-T angle can be easily implemented on modern electrocardiographs, which are nowadays equipped with sufficient computing power. Kardys teaches that the abnormal 3-D QRS-T angles are associated with worse cardiac outcomes such as fatal cardiac events (see Kardys pages 1357-1364). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Anderson in view of Kardys to utilize a 3-D QRS-T angle calculated from a set of orthoganalized X, Y and Z leads of the ECG since such a modification would allow for assessment a patient's worsening condition and since such a modification may be easily implemented and is less susceptible to noise.

The previously modified Anderson reference discloses the claimed invention as discussed above except that the method does not further comprise conduction a time series analysis of the

first and second values. Kaplan, however, teaches that is known to use a time series to quantify beat-to-beat variability in an ECG waveform in order to determine susceptibility to ventricular fibrillation (see Kaplan column 5, lines 12-23 and column 6, lines 1-22). Kaplan also discloses that an objective of the time series analysis on a plurality of beats is to derive a numerical parameter from the ECG, which is associated with susceptibility to ventricular fibrillation (see Kaplan Abstract and column 2, lines 25-30). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Anderson in view of Kardys and Kaplan to include a time series analysis in order to derive a numerical parameter associated with susceptibility to ventricular fibrillation.

15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson in view of Kardys and Kaplan as applied to claim 18 above, and further in view of Verrier '617. The previously modified Anderson reference discloses the claimed invention as discussed above except that the method does not further comprise using a cardiac parameter or heart rate variability in addition to the ECG signal to asses the patient's cardiac vulnerability to sudden cardiac death.

Verrier '617, however, discloses a method and apparatus for the non-invasive diagnosing of cardiac vulnerability to ventricular fibrillation that comprises evaluating heart rate variability in addition to T-wave alternans of the ECG signal (see Verrier '617 Title and Abstract). Verrier '617 discloses that heart rate variability is a measure of autonomic influence, which is a major factor in triggering cardiac arrythmias and that by simultaneous analysis of the ECG signal and heart rate variability allows for the extent and cause of cardiac vulnerability to be assessed so that drug therapy may be tailored per patient (see Verrier '617 column 4, lines 54-67 and column

5, lines 1-5). The Examiner takes the position that heart rate variability is synonymous with a cardiac parameter. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Anderson in view of Kardys, Kaplan and Verrier '617 to include simultaneous evaluation of heart rate variability in addition to the ECG signal to better asses the patient's vulnerability to sudden cardiac death and to tailor a drug therapy as best to treat the patient.

Response to Arguments

16. Applicant's arguments filed March 22, 2007 have been fully considered but they are not persuasive. In response to Applicant's argument that there is no indication of any teaching to combine the Kardys reference with the Anderson reference (see page 8 of the Remarks), the Examiner respectfully disagrees. As previously discussed Kardys expressly teaches that the special QRS-T angle, read as the 3-D QRS-T angle is a strong and independent predictor of cardiac mortality that is stronger than any of the classical cardiovascular risk factors and ECG risk indicators and further that it provides additional value compared to such classical risk factors in predicting fatal cardiac events (see Kardys Abstract page 1357). Kardys also discloses that calculation of the 3-D QRS-T angle can be easily implemented on modern electrocardiographs, which are nowadays equipped with sufficient computing power. Kardys teaches that the abnormal 3-D QRS-T angles are associated with worse cardiac outcomes such as fatal cardiac events (see Kardys pages 1357-1364). As previously discussed by the Examiner, it is these benefits, which are expressly taught by the Kardys reference, that provide the motivation to combine. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Anderson to utilize a 3-D QRS-T angle calculated

from a set of orthoganalized X, Y and Z leads instead of the 2-D QRS-T angle since such a modification would allow for reliable and strong assessment a patient's worsening condition and since such a modification may be easily implemented and is less susceptible to noise as expressly taught by Kardys.

17. In response to Applicant's arguments based upon the age of the references (see page 9 of the Remarks), contentions that the reference patents are old is not impressive absent a showing that the art tried and failed to solve the same problem notwithstanding its presumed knowledge of the references. *In re Neal*, 179 USPQ 56 (CCPA 1973).

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

19. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

20. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Jessica L. Reidel whose telephone number is (571) 272-2129. The Examiner can normally be reached on Mon-Thurs 8:00-5:30, every other Fri 8:00-4:30.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Carl H. Layno can be reached on (571) 272-4949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jessica L. Reidel 05/17/07
Examiner
Art Unit 3766

Carl H. Layno
Primary Patent Examiner
Art Unit 3766

CARL LAYNO
PRIMARY EXAMINER
ACTING SPE, AU 3766